

AMENDMENTS TO THE SPECIFICATION

On page 6, please replace paragraph 14 as follows:

The present invention is generally directed to a portable (e.g. handheld), low-power, low-cost, high-performance detection instrument having a small application-specific sensor integrated with a cellular telephone, personal digital assistant (“PDA”), or other portable personal electronic device. Such portable personal electronic devices are preferably of a type having both a locator functionality for electronically determining the location of the instrument, e.g. using a global positioning system (“GPS”) receiver, and a wireless communications functionality enabling mobile data transfer, e.g. using a wireless modem to enable mobile Internet access. Portable personal electronic devices having at least the wireless communications functionalities are generally referenced herein as mobile communications devices (“MCD”). It is appreciated that the locator and wireless communications functionalities may be provided by built-in components of the MCD, or in the alternative, by separate attachments which connect to the MCD via expansion ports. In any case, the detection instrument is generally configured to provide sensing/detecting and data analyzing functions directly to a user in the field, so as to provide enhanced functionality and added value beyond the basic functions provided by the MCD. As mentioned above, various types of application-specific sensors may be utilized for different detection applications including, for example, radiation sensors, chemical, and/or temperature sensors, shock, motion, aural and visual sensors, with each type of sensor particularly configured to detect the respective application-specific parameter. For example, a radiation sensor may be utilized which is configured to measure individual photon energies.

On page 6, please replace paragraph 15 as follows:

Additionally, in a wide-area detection network and system of the present invention, a plurality of such detection instruments are widely distributed in a wide-ranging geographic region, such as a city, county, or even state or nation-wide, with each unit configured to continuously monitor and automatically communicate with a central data collection, analysis, and monitoring system (“CENTRAL MONITORING SYSTEM”) in real time. The central monitoring system uses the data obtained from the entire network of detection instruments to detect, identify and/or track and monitor emissions, e.g. radiation sources, or other sources of the application-specific detection, i.e. application-specific source (e.g. a chemical source) present in or moving through the region. It is notable that the locator device utilized in the present invention is preferably a coordinate locator based on an absolute coordinate system for location identification, such as the latitude, longitude and altitude coordinate system utilized by GPS systems to plot GPS coordinates. Another example includes coordinate locator systems employing the triangulation method. Furthermore, locations are not determined by or measured in relation to (distal, spatial, angular, or otherwise) the central monitoring system, since the central monitoring system need not be located within the region of interest.

On page 9, please replace paragraph 18 as follows:

Figure 2 shows in detail the various components of the radiation sensor module 101 of Figure 1. The sensor module 101 includes an interface board 201 serving to mount and interconnect the various components of the sensor module 101 with each other, including a radiation detector/sensor 202 such as a solid state gamma-ray and/or neutron detector, and a microprocessor 206, among others. The detector is preferably a semiconductor material of a

type operable in room temperature for measuring gamma-ray photons and/or neutrons, such as for example cadmium zinc telluride, cadmium telluride, mercuric iodide, lead iodide, or aluminum antimonide (CdZnTe, CdTe, HgI, PbI, AlSb), among others. The radiation detector 202 is directly connected by interconnects to low-power VLSI readouts, such as the application specific integrated circuit (“ASIC”) readout 203, for radiation sensing. For example, a VLSI readout providing 512 individual “smart” pixels and all required processing electronics has been utilized by Applicants. And the sensor module 101 also includes a processor module at 204, which receives and processes all the data (“radiation data” collectively) from the readout ASIC 203, including for example the photon event list. The Readout ASIC 203 and the processor module 204 each communicates with a multiplexing analog-to-digital converter (Mux ADC) at 205 for the purpose of digitizing the detector data. The radiation data may also include detector temperature data obtained by a temperature sensor 207 adjacent the detector 202. And a RAM chip 206 is provided to enhance the processing power of the microprocessor and to provide onboard storage of data until transmission to a data server of the central monitoring system. It is appreciated that a data storage device of the cell phone/MDC may be utilized in the alternative. Power is supplied to the sensor module 101 by a battery 210 or other power source e.g. fuel cell, which may be the cell phone/MCD battery or a separate battery dedicated to the sensor module. In any case, a high voltage power source 208 and a low voltage power source 209 are provided, for supplying the appropriate level of power to the detector 202, the readout ASIC 203, the processor module 204. The radiation data collected and processed in this manner is then routed to the cell phone, such as by a serial interface as indicated by arrow 211. While not shown in the drawings, the detection instrument may also include a clock-calendar component operably connected to the mobile communications device for determining the

time-date of each photon event detected by said radiation detector. Similarly, the clock-calendar may be used to determine a time-date associated with each unit of other application-specific parameters (e.g. chemical sensing applications). It is appreciated that the clock-calendar component may also be integrated as a built feature of the MCD, the locator (e.g. GPS) system, or the sensor module 101.